

REMARKS

Claims 1-24 remain pending in this application. Claims 1, 8, 9, 20, 23, and 24 are in independent form. No claim amendments have been made herein.

Applicant notes with appreciation the indication that Claims 7, 15, 21/15, and 22/15 would be allowable if rewritten in independent form. These claims have not been so rewritten because, for the reasons given below, the respective base claim of each is believed to be allowable.

Claims 1, 5, 6, 9, 13, 14, 16-19, 21/9, 21/13, 21/14, 21/16-19, 22/9, 22/13, 22/14, 22/16-19, and 23 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,011,901 (*Kirsten*), and Claims 2-4, 8, 10-12, 20, 21/10-12, 21/20, 22/10-12, 22/20, and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Kirsten* in view of U.S. Patent No. 4,916,540 (*Kosaka*).

Reconsideration is respectfully requested in view of the following comments.

Applicant will first address the Section 102(e) rejection of Claim 1.

Claim 1 is directed to an apparatus for processing image data defining a plurality of input images of a changing scene recorded at different times from at least one of different viewing positions and different viewing directions. The apparatus is operable to process the image data to generate data for defining a sequence of images conveying an evolving representation of the scene from a fixed viewing position and direction between the times at which the first and last input images were recorded. The apparatus includes an image registering unit, arranged to register the input images so that the registered input images represent the scene from the same viewing position and direction relative to the

scene, and a pixel value interpolator, arranged to interpolate between pixel values of the registered input images to generate pixel values for interpolated images from the same viewing position and direction relative to the scene for the image sequence.

Applicant has carefully reviewed the content of *Kirsten* and submits that *Kirsten* does not teach or suggest the features of Claim 1.

Paragraph 4 of the Office Action alleges that *Kirsten* discloses an apparatus for processing image data defining a plurality of input images of a changing scene recorded at different times from at least one of different viewing positions and different viewing directions to generate data for defining a sequence of images conveying an evolving representation of the scene from a fixed viewing position and direction. The Office Action further alleges that *Kirsten* discloses these features at column 5, lines 21-38, column 8, lines 32-54, and column 13, lines 1-11.

Kirsten relates to the recording and recovery of video and other data from a single or multiple monitored sites, and in particular, the *Kirsten* system is applicable to surveillance of sites such as industrial plants, banks, and other institutional properties. The *Kirsten* system digitizes selected frames or fields of video from a single video source or multiple asynchronous video sources, compresses the digitized video and stores the compressed video onto a digital storage device (see, for example, the Abstract and column 3, lines 41-44). The *Kirsten* system is designed to operate with fixed-view, low motion content images of the type characteristic of surveillance applications (column 4, lines 2 and 3). However, there is no processing of video data in the *Kirsten* system to generate images from a different viewing position or direction from the viewing position and direction of the camera which recorded the images. In addition, there is no processing in the *Kirsten*

system to generate interpolated images lying in a temporal sequence between images recorded by a camera.

The Office Action refers to column 5, lines 21-38, of *Kirsten* as discussing commonly used recorders that intermittently record video images at five images per second instead of full frame rate. These are referred to as “time-lapse” recorders in *Kirsten*. This type of recording is used to reduce the amount of image data to be stored.

Column 8, lines 32-54, referred to in the Office Action, merely explains that video is made up of a series of images, and column 13, lines 1-11, merely discuss that the surveillance cameras have a fixed view of the scene they are recording.

Applicant submits that none of the cited passages of *Kirsten*, or any other part of *Kirsten*, discuss that image data from different cameras having at least one of different viewing positions and different viewing directions is processed to generate a sequence of images from a fixed viewing position and direction, and between the times at which the first and last images were recorded by the cameras.

To the contrary, in the *Kirsten* system, the video recorded by the different cameras from the respective viewing position and direction of each camera remains as video data from the different respective viewing positions and directions. There is no processing in the *Kirsten* system to change the video data of any camera to a different viewing position and direction to generate video data from a fixed viewing position and direction from all cameras.

In addition, *Kirsten* is totally silent about generating images from a fixed viewing position and direction between the times at which the first and last input images were recorded.

Nothing has been found, or pointed out, in *Kirsten* that teach or suggest processing image data defining a plurality of input images of a changing scene recorded at different times from at least one of different viewing positions and different viewing directions to generate data for defining a sequence of images conveying an evolving representation of the scene from a fixed viewing position and direction between the times at which the first and last input images were recorded, as recited in Claim 1.

The Office Action alleges that *Kirsten* teaches an image registering unit, arranged to register the input images so that the registered input images represent the scene from the same viewing position and direction in Figure 8, column 11, lines 38-61, and column 28, lines 33-44.

Applicant, after thoroughly reviewing these parts of *Kirsten*, respectfully disagrees with the Examiner's assertion. Applicant understands Figure 8 and column 11, lines 38-61, as merely being concerned with determining the phase of all video input streams and selecting video streams in dependence upon the phase. The description at column 3, lines 59-65, explains that the purpose of this phase tracking is to allow camera selection, such that single fields or frames can be acquired at nearly the full rate of the video signal format. This feature enables the *Kirsten* system to replace the multiplexer normally used ahead of the video cassette recorder in previous systems. This feature, however, is not concerned with registering images so that the registered images represent a scene from the same viewing position and direction relative to the scene. The disclosure in *Kirsten* at column 28, lines 33-44, also fails to disclose an image registering unit. Rather, the cited passage is merely concerned with a loop operation to control data storage.

Nothing has been found, or pointed out, in *Kirsten* that would teach or suggest an image registering unit, arranged to register the input images so that the registered input images represent the scene from the same viewing position and direction relative to the scene, as recited in Claim 1.

The Office Action further alleges that *Kirsten* teaches a pixel value interpolator arranged to interpolate between pixel values of the registered images to generate pixel values for interpolated images from the same viewing position and direction relative to the scene for an image sequence, and cites Figure 14 and column 17, line 59, through column 18, line 9, as support thereof. Applicant respectfully disagrees.

Figure 14 and column 17, line 59, through column 18, line 9, of *Kirsten* is merely concerned with lowering the resolution of single individual images by reducing the pixel density of each individual image. The pixel density may be reduced by re-spacing pixels through interpolation within a single individual image or by direct elimination of pixels within a single individual image. The processing does not concern interpolation between pixel values of different images and is not concerned with generating interpolated pixel values for interpolated images from the same viewing position and direction relative to a scene.

Applicant submits that nothing has been found in *Kirsten* that would teach or suggest a pixel value interpolator, arranged to interpolate between pixel values of the registered input images to generate pixel values for interpolated images from the same viewing position and direction relative to the scene for the image sequence, as further recited in Claim 1.

For at least the above reasons, Applicant submits that Claim 1 is clearly patentable over *Kirsten*.

Independent Claims 9 and 23 are respectively a method claim and another apparatus claim, corresponding to apparatus Claim 1, and are believed to be patentable for reasons substantially similar as those discussed above in connection with Claim 1.

Claim 8 is directed to an image processing apparatus for generating data for a time-lapse sequence of images of a changing scene from the same viewing position and direction relative to the scene. The apparatus includes a transformation calculator, arranged to calculate transformations to register input images recorded from at least one of different viewing positions and different viewing directions so that the registered input images represent the scene from the same viewing position and direction relative to the scene, and an image data generator, arranged to use the input images and the calculated transformations to generate data for images of the scene from the same viewing position and direction to be displayed in the sequence.

Paragraph 5 of the Office Action states that independent Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Kirsten* in view of *Kosaka*.

However, the reasons subsequently set out in the Office Action for rejecting Claim 8 are based on U.S. Patent 5, 214,751 (*Robert*), and not *Kosaka*.

In paragraph 2 of the Office Action, the Examiner states that Applicant's arguments concerning previous rejections of Claims 1-24 based on *Robert* have been fully considered and are persuasive. Accordingly, paragraph 2 of the Office Action withdraws the rejection based upon *Robert*.

The Office Action, however, provides no explanation of how *Robert* and *Kirsten* may be combined to remedy the deficiencies within each respective patent as a reference against Claim 8.

For at least the reasons previously explained about the disclosure in *Robert* (see Amendment After Final Action dated November 5, 2003), which the Examiner acknowledges are persuasive, and for the reasons explained above with respect to *Kirsten*, Applicant submits that nothing has been found, or pointed out, in either *Kirsten* or *Robert* that would teach or suggest the features of Claim 8.

Therefore, even if *Kirsten* and *Robert* were to be combined, assuming such combination would even be permissible, the resulting combination also would fail to teach or suggest the features of Claim 8.

Furthermore, Applicant has carefully reviewed *Kosaka*, and submits that nothing has been found in this reference to remedy the deficiencies of *Kirsten* and *Robert*.

Accordingly, Applicant submits that Claim 8 is clearly patentable over *Kirsten*, *Kosaka*, and *Robert*, whether considered separately or in any combination, and respectfully requests withdrawal of the rejection of Claim 8 under 35 U.S.C. § 103(a).

Independent Claims 20 and 24 are respectively a method claim and another apparatus claim, corresponding to apparatus Claim 8, and are believed to be patentable for reasons substantially similar as those discussed above in connection with Claim 8.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Ronald A. Clayton", written over a horizontal line.

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